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2/19/03-3237

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Ser EP4417/ 000222

19 FEB 2003

From: Commanding Officer, Navy Environmental Health Center
To: Commanding Officer, Atlantic Division, Naval Facilities Engineering Command
(Kirk Stevens), 1510 Gilbert Street, Norfolk, VA 23511-2699

Subj: MEDICAL REVIEW OF DRAFT REMEDIAL INVESTIGATION WORK
PLAN OPERABLE UNIT NO. 15 (SITE 88), MARINE CORPS BASE
CAMP LEJEUNE, NC

Ref: (a) CH2MHILL ltr 174056.PP.DR of 22 Jan 03

Encl: (1) Subject Medical Review

1. Per reference (a), we have completed a review of the subject document and forward our comments to you as enclosure (1).

2. We are available to discuss the enclosed information by telephone with you and, if you desire, with you and your contractor. If you require additional assistance, please call Mr. Kenneth Gene Astley at (757) 953-0937 or Mr. David McConaughy at (757) 953-0942. The DSN prefix is 377. The e-mail addresses are: astleyg@nehc.med.navy.mil and mcconaughyd@nehc.med.navy.mil.

C. P. RENNIX

By direction

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**MEDICAL REVIEW OF
DRAFT REMEDIAL INVESTIGATION WORK PLAN
OPERABLE UNIT NO. 15 (SITE 88)
MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA**

Ref: (a) Risk Assessment Guidance for Superfund, Vol. 1, Part A: Human Health
Evaluation Manual, Dec 1989 (EPA540/1-89/002)

General Comments:

1. The document entitled "Draft Remedial Investigation Work Plan Operable Unit No. 15 (Site 88) Marine Corps Base Camp Lejeune, North Carolina," was provided to the Navy Environmental Health Center (NAVENVIRHLTHCEN) for review on 30 January 2003. CHM2 Hill Inc. prepared the report for the Atlantic Division, Naval Facilities Engineering Command.

2. How the proposed shallow and intermediate groundwater sampling data will be used to address data gaps is not clear. The data gaps as defined in the previous remedial investigation report are specific as to whether the deep aquifer zone is being impacted by the shallow contaminated aquifer. In the past, volatile organic compounds (VOCs) were found above drinking water standards in the shallow aquifer. However, the text states that shallow aquifer is unlikely to be used for potable water based on the availability of an alternate source of better yield.

Review Comments and Recommendations:

1. Page 1-2, Section 1.1, "Project Objectives and Scope of Work":
Page 1-2, Section 1.1.2, "Scope of Work":
Page 3-4, Section 3.3.1, "Preliminary Human Health Evaluation":

Comments:

a. The text states on Page 1-2 that "The video surveys will be used in conjunction with existing soil and groundwater chemical and physical data to select appropriate sampling locations along the underground utility corridors." This (selective sampling) is appropriate for identifying data gaps associated with characterizing the extent of contamination, but is not appropriate for use in a human health or ecological risk assessment.

b. Reference (a) Section 4.6.2 states that “Although areas of concern are established purposively (e. g., with the intention of identifying contamination), the sampling locations within the areas of concern generally should not be sampled purposively if the data is to be used to provide defensible information for a risk assessment.” Risk estimates calculated from sampling data collected from locations expected to have the highest concentrations almost always overestimate the risk. The text should clearly state how analytical data from “purposively selected sample locations” would be used in a human health risk assessment.

c. The text states on Page 1-2 that “Near surface soil samples (zero-to 2-feet below ground surface (BGS) will be collected from the grassy area on the north side of Building 25 and analyzed to evaluate potential exposure pathways by direct contact with surface soil.” If collected data is to be used in either the human health or ecological risk assessments, collecting samples from zero to 2 feet may not be appropriate. Reference (a) directs that surface soil samples should be collected “from the shallowest depth that can be practically obtained” to accurately reflect potential surface soil pathways.

d. The text states on Page 3-4 that “In 1997, Baker determined that the significance and extent soil contamination was minimal.” The reason further soil samples are required in this remedial investigation should be discussed in the text in more detail.

e. The text also states on Page 3-4, “Various metals were reported in the soils, but may be attributed to natural occurrence since they were present at concentrations below background levels.” However, the text states on Page 4-4 that soil and groundwater samples will be analyzed for metals. The data gap identified is whether or not the levels of metals detected are above background. Therefore, we suggest that emphasis be placed on establishing the appropriate background metal concentrations levels rather than re-sampling at the sites. The base-wide background study currently being conducted should identify the data gaps associated with potential heavy metal contamination.

Recommendations:

a. The text should clearly state if analytical data from purposively selected sample locations will be used in a human health risk assessment to estimate human health exposure.

b. We are encouraging the adoption of “zero to six inches” as the norm for surface soil sample collection for any future site soil sampling investigation and/or monitoring efforts that may be undertaken.

c. The reason further soil samples are required in this remedial investigation should be discussed in the text in more detail. Any data gaps associated with the background investigation should be discussed.